US LHC Tier2 Activity for April 2010

Overview

This report shows USLHC Tier2 reliability and usage during April 2010 as measured by OSG tools.

	Reliability	Availability	CPU Wallclock hours for Owner VO	CPU efficiency for Owner VO	CPU hours for Owner VO	MoU Pledge		Wallclock hours delivered to all OSG VOs
ATLAS T2 Federations			ATLAS	ATLAS	ATLAS			
US-AGLT2	98%	97%	5,339,685	83%	4,410,984	416,880		5,339,689
US-MWT2	100%	97%	2,956,839	94%	2,767,890	480,384		2,989,970
US-NET2*	90%	77%	1,028,161	67%	688,812	287,280		1,028,229
US-SWT2	99%	94%	1,607,835	90%	1,450,464	598,752		1,901,551
US-WT2	98%	98%	2,450,450	94%	2,292,634	354,240		2,450,450
CMS T2s			CMS	CMS	CMS			
T2_US_Caltech	100%	100%	1,221,218	64%	781,484	432,000		1,942,927
T2_US_Florida	96%	95%	1,190,766	68%	809,470	432,000		1,696,372
T2_US_MIT	100%	99%	888,802	78%	693,047	432,000		1,152,934
T2_US_Nebraska	100%	99%	713,550	76%	545,318	432,000		1,743,142
T2_US_Purdue	100%	100%	1,720,778	82%	1,411,747	432,000		2,422,892
T2_US_UCSD	100%	100%	1,509,624	66%	999,505	432,000		1,608,060
T2_US_Wisconsin	98%	97%	1,251,300	74%	931,717	432,000		1,300,278

* Denotes a federation with month-specific notes below.

Column header definitions are given below.

April specifics:

- Every site met its MoU pledge.

- US-NET2 has a large difference between Reliability and Availability. This is due to scheduled downtime at Harvard related to Condor-G, and a few days of unscheduled issues with GRAM Authentication.

Column Definitions:

- **Reliability**. The percentage of time the site was functional excluding scheduled downtimes.
- **Availability**. The percentage of time the site was functional out of the entire month (including downtimes)
  - Reliability/Availability cells colored to match WLCG: green indicate a score between 90% and 100%; yellow indicate a score between 60% and 90%; orange indicate a score between 30% and 60%; red indicate a score between 0% and 30%
  - The WLCG MoU states that Tier 2 sites should have a reliability of 95%. The availability and reliability of a site is measured by the WLCG availability algorithm, which allows us to effectively compare numbers between OSG sites and EGEE sites.
- **CPU Wallclock hours for owner VO**. This is the sum of all "wall clock hours" for the owner VO at a site. The "owner VO" is either CMS or ATLAS. A wall clock hour is the number of hours elapsed between job start and finish, regardless of CPU utilization. This number is normalized for CPU power.
- **CPU efficiency for owner VO**. This is the average CPU utilization per job at each site for the owner VO.
- **CPU hours for the owner VO**. This is simply the wall clock hours column multiplied by the CPU efficiency. This number is normalized for CPU power.
- **MOU Pledge.** The normalized CPU hours per month pledged to the owner VO, assuming an 80% CPU efficiency. Sites should be able to provide this number of hours to the VO, but the VO may not utilize all of them.
  - The usage at sites is limited by the number of CPUs available and/or by the amount of work that the VOs need to have done. During "off-peak" months, or between major software releases, it is common to see VOs committing effort elsewhere besides running jobs.
- **Wallclock hours delivered to all OSG VOs**. This is the sum of all wall clock hours performed at the site, regardless of VO.
  - On OSG, sites can (but are not required to) allow other VOs to opportunistically use their resources. Sharing of resources is typically affected by whether there are members of another VO at the university or institution itself (e.g. CDF at MIT) and the availability of effort for configuration and support.

Units of Measurement

The WLCG measures job usage in CPU hours (the amount of time the CPU was active); OSG reports show the elapsed, or "wall" time. As jobs occupy batch slots regardless of the application's CPU usage, we report this relevant measurement. The WLCG management has agreed that this is a relevant measure and will be including this sometime in the future.

In future the WLCG will be moving to a new unit of measuring performance of a CPU, changing from SpectInt2000 (SI2K) to SpectInt2006 (SI2006). This will need a slight adjustment of our calculation codes.

We also report the CPU efficiency, the ratio between CPU hours and wall hours.

All the usage numbers are multiplied by a normalization factor that accounts for the average relative difference in CPU power. The normalization factor used by the WLCG varies from site to site; for April 2010, this constant varies between 1.535 and 3.672.